

The Mining Journal

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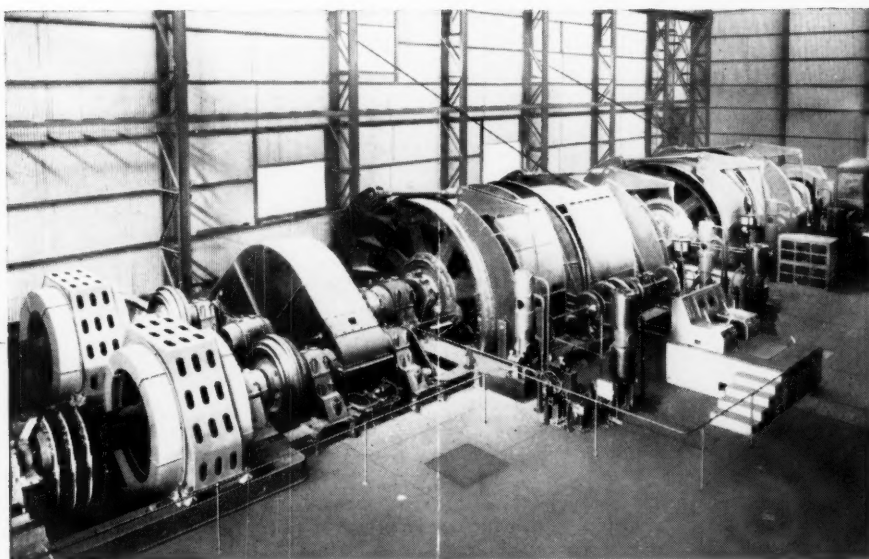
Railway & Commercial Gazette

Vol. CCXLII No. 6180

LONDON, JANUARY 29, 1954

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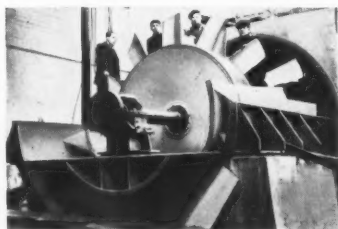
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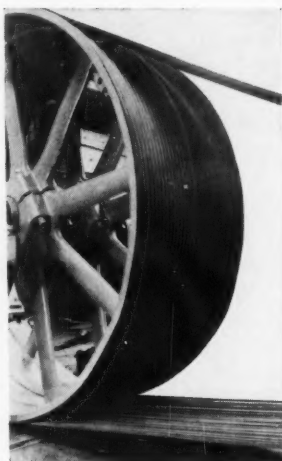
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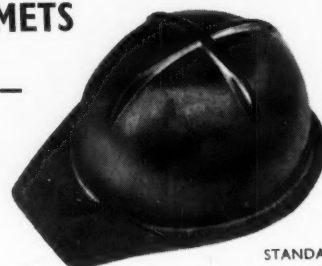
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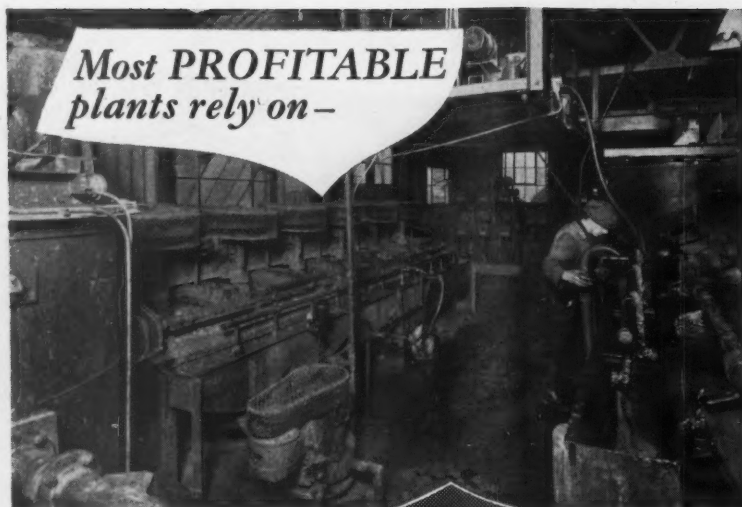
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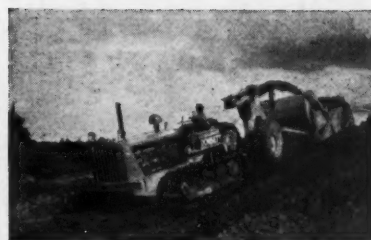
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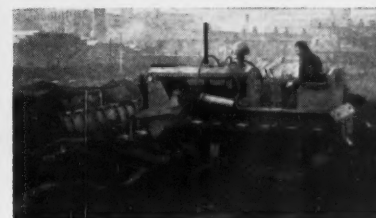
Hauling a 13-yard scraper this Challenger 4 is filling in the worked out Esswood open cast coal site at Essington in Staffordshire.



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NOTES AND COMMENTS

The Bankers Take Stock

The publication of the Westminster Bank's report and accounts at the beginning of this week brings to a close this year's round of annual surveys by the chairmen of Britain's leading Banks which annually provide a penetrating analysis of the country's economic progress.

The most impressive feature of the annual statements was the unqualified acknowledgement of the good progress Britain achieved during the past year. But far from engendering a feeling of complacency, the knowledge that Britain had at last gone some distance along the path towards national solvency seemed to provide a point of departure from which the chairmen in trenchant terms expressed their views on the crucial sectors of the economy affecting the health and wealth of the nation.

Thus Lord Aldenham, chairman of the Westminster Bank, warns against any premature jump into full convertibility even though conceding it would be advantageous to this country's invisible exports. Broadly speaking, this was the view of his colleagues from the other Banks, with the notable exception of Mr. J. D. Robarts, chairman of the National Provincial Bank, who, in his maiden speech, argued the case for sterling convertibility as soon as practicable. Mr. Robarts anticipated the Randall Report on the question of tariffs by pointing out that it will not be easy for the American administration to make a radical change in their economic policy. But this, he declared, must not be taken as an excuse for inaction on Britain's part. Eliminate the weaknesses in our economy; root out the inflationary tendencies which still persist and if this can be achieved and we can make our prices competitive in the open market, we shall be in a far stronger position to appeal for more liberal trade policies.

In general, the chairmen found a wide area of common ground on the subject of exports. Prices were the crucial factor, but the ability to promise—and honour—speedy delivery dates was felt to be a major factor in a country's competitive export power. In fact, Lord Aldenham, of the Westminster Bank, believed that it would be a shrewd decision to send not only export managers but also some of the foremen at the producing end out to foreign markets where they could judge for themselves on

the spot the amount of harm caused to Britain's export trade through delays in delivery.

Mr. A. W. Tuke, chairman of Barclays Bank, takes the bit between the teeth when referring to Government expenditure which, he declares, must be tackled in a sterner and more business-like manner if the good progress made over the past two years is not to be wasted. On the question of inflation, however, Mr. Tuke is not quite so forthright. His view is that the Government's aim was the limited one of halting any further extension of inflation in the economy to achieve which the old method of controlling credit through the instrument of the bank rate was re-adopted. While admitting that this method had borne fruit as evidenced by the reduction of the bank rate, he appeared to believe that the equilibrium achieved was precarious. For if another series of claims for higher wages for the same work were granted, he said, we may be thrown back into a state of crisis caused quite simply by the impossibility of selling our manufactured goods abroad at resultant higher prices.

Lord Harlech, chairman of the Midland Bank, argued that convertibility must wait upon the emergence of more definite lines of United States Government policy than have yet appeared.

Lord Balfour of Burleigh, chairman of Lloyds Bank, reviews Britain's record of production and exports between the two world wars and points out that our trading experience compares unfavourably with that of other western European countries. This result, he attributes to the combination of over-taxation and creeping inflation. As to inflation, he said that continuance of the wages spiral provided sufficient evidence that it persists and that being so, he could not escape the conclusion that the position must still occasion grave concern until there is a great increase in the volume of productive investment at home and until a substantial and enduring external surplus has been built up.

The Randall Report Settles Nothing

The forecast, made in this column a fortnight ago, that the recommendations of the Randall Commission were likely to prove at once inadequate in themselves and yet too far reaching to be put through Congress in an election year, has been fully justified in the event. Not only is the whole tone of the Commission's report very different from

that of the Douglas report of last autumn, which many of us had hoped might have paved the way for more constructive proposals, but, as perhaps was inevitable from the composition of the Commission, its report is nothing more than a series of majority recommendations, in which no single major item has gone unchallenged by less than two of the members of Congress who will have most to do with any legislation arising from the report. Two of the most consistent opponents of the report are Mr. Daniel A. Reid, chairman of the House Ways and Means Committee, and Senator Eugene D. Millikin, from Colorado, chairman of the Senate Finance Committee. With the report thus faced with strong opposition at such strategic points in the legislative machine, the chances of any of the report's recommendations becoming law this year seem very slight, even if the White House elects to put the full set of Randall proposals before Congress, which is, of course, by no means certain.

The best that can be looked for would seem to be an extension of the Reciprocal Trades Agreement Act, perhaps for another three years as proposed in the report, with the possibility of some new legislation after the Congress elections next autumn.

On most points the advance "leaks" regarding the contents of the report, to which we referred at the time, have proved substantially correct although it is noteworthy that instead of the anticipated recommendation that the "Buy American" Act be repealed the report only recommends its modification so that in cases where foreign countries permit American bidders to compete on equality with their own nationals reciprocal privileges should be given.

Although, as expected, the report expresses itself in favour of the stabilization of raw material prices, deductions made from this that the prospects of the U.S. ratification of the Tin Agreement were thereby enhanced have nevertheless been proved wide of the mark. In the words of the report "the Commission does not believe that extensive resort to commodity agreements will solve the problem of price stability; and it believes that such agreements introduce rigidities and restraints that impair the elasticity of economic adjustment and the freedom of individual initiative which are fundamental to economic progress."

While it remains technically possible for the Tin Agreement to be ratified without American support, the practical difficulties appear very great. Moreover, who can say whether the implementation of the agreement might not be interpreted by Congress as price fixing, restraint of trade, or even "gouging" of such a nature as would justify retaliation by making stockpile tin available to the American market?

The section of the report dealing with U.S. dependence on imported materials is, for what it is worth, a majority report in favour of fostering private overseas investment for the development outside of the States of the production of raw materials in which the States and the Free World in general are deficient. Various incentives for such investment are suggested, including reduced rates of company taxation and government guarantees against loss through political action.

Beyond the recommendation that U.S. tariff policy towards needed materials should be such as to offer them easy access to the U.S. market, the report offers no encouragement to those who might have hoped for a removal of existing import duties such as those on lead and zinc. Indeed, we would say that the tentative nature of the report will, if anything, tend to strengthen the hands of the domestic producers in their demands for additional protection if, and when, a recession really gets under way.

Canada

(From Our Own Correspondent)

Winnipeg, January 11.

Arrangements are being made for the construction of the longest pipe line in the world through which natural gas will be delivered from Alberta in the far west of Canada to the industrial centres of the east in the provinces of Ontario and Quebec. In this big undertaking Trans-Canada Pipe Lines Ltd. and Western Pipe Lines Ltd. have agreed to merge their interests and will operate under the name of Trans-Canada Pipe Lines Ltd. in order to take over the Parliamentary authority given the original company of that name.

The proposed route will be by way of Winnipeg, Port Arthur and Fort William, Sudbury and Toronto—thence north-easterly to Montreal—a total distance of nearly 2,300 miles. The estimated initial cost of a 36 in. line is \$318,000,000, while that of a 30 in. line has been estimated at \$243,000,000. At the outset, the indications are that a 36 in. line may be required as far as Toronto, and with a reduction to 30 in. in the continuation to Montreal and points east. The outlook is that construction may get under way before the end of the coming summer. It has been estimated that natural gas may be delivered to Toronto at a cost of \$1.10 per 1,000 cu. ft.

From the source of supply in Alberta, Premier Manning has declared that a total of 3,500,000,000 cu. ft. of gas will be reserved for use in eastern Canada on the basis of a 30 in. pipe line. Should the survey now in progress suggest demand for a 36 in. line, it is believed the increasing source of supply would justify the approval of the province of Alberta. The indications are that with construction of the 36 in. line the people of Alberta would stand in a position to receive royalties of close to \$2,000,000 per month, while the boost it would give to the industrial east would be vast.

MORE SETTLED LABOUR OUTLOOK

The outlook in the second week of 1954 has shown encouraging prospects of the labour strikes coming to an end in the Porcupine goldfield. Employees of the largest mine, Hollinger Consolidated, have accepted the company terms and have returned to work. This is expected to become the pattern under which disputes may be terminated at the mines still closed by strikes. In every direction the available supply of labour appears to be unusually plentiful. This is a situation which points toward likelihood of greater working efficiency as compared with the past when labour was scarce. It is believed this increase in working efficiency may go a long way to offset the cost of the increase in rate of pay. In view of this, and because of the mild deflationary trend taking place on this continent, there is reason to believe the producers of gold are emerging from the difficult conditions under which they have operated for many years—and with promise of slowly improving conditions in the industry for some time to come.

Cassair Asbestos Corp. is planning to complete construction of a mill of 500 tons daily capacity before the middle of this year on its property at McDame Lake in northern British Columbia. Ore resources are estimated to be 7,232,000 tons containing gross value of \$30 to the ton, with the full limits of the deposit not yet defined. Three diesel units are to provide 950 h.p., and a unit of 459 h.p. has been placed on order. To accommodate the new mining operation, the British Columbia Government built a roadway to the boundary to connect with the Alaskan highway.

Exploration on uranium deposits in the Blind River section of Northern Ontario has been further encouraged by deep diamond drilling results on the property of Pronto Uranium Mines from 1,565 ft. depth.

The U.K. Coal Industry in 1953

(By Our Coal Correspondent)

The British coal mining industry only just managed to satisfy the minimum requirements in 1953 and the National Coal Board began the new year unprepared financially to meet the demand for higher wages by the lower-paid section of the mineworkers. This demand, if granted in full, would add another £14,000,000 to the Board's annual expenditure and the price of coal would have to be increased by 1s. 6d. a ton to meet it. The National Union of Mineworkers allege, however, that the big industrial consumers are not paying an economic price for coal and that if they did the increased wages could be met out of revenue. The Board's answer to this has not been published but the chairman stated recently that selling prices are being constantly reviewed regardless of any wage claims.

The statement of account for the third quarter of 1953 showed a net loss of £1,860,000 but the last quarter yielded a surplus which is expected to balance income and expenditure for the year as a whole. The total output last year was 223,520,000 tons compared with 224,790,000 tons in 1952. The loss of output due to the extra statutory holidays granted to the miners last summer amounted to 5,150,000 tons but the improved results obtained during Saturday shifts, which continue to be worked as overtime, together with a slight increase in overall productivity on other days nearly recouped this loss. There was, on the other hand, a slight drop in productivity at the face and this caused no little concern because with the new machinery and improved methods the face workers should have done better.

The increase in general industrial activity in 1953 raised inland coal consumption to 207,500,000 tons from 206,000,000 in 1952 and exports and bunkers were also up by 1,500,000 tons compared with 1952.

NEW DEVELOPMENTS

More new mines were started during the year and the number of deep sinkings were brought up to nine. Four of these are in Scotland, three in the Midlands and two in the South Wales anthracite coalfield. The shafts of one of the new anthracite collieries are being sunk by a German firm with teams of sinkers, brought over from Germany, who are ambitious to complete the work in record time. This contract was given to a German firm because British firms are fully engaged on the other sinkings. The nine new collieries will eventually have a combined output of 10,000,000 tons a year and they will enable several of the most uneconomic pits in their neighbourhood to be closed down. The National Coal Board, however, consider the reconstruction of existing collieries to be the more urgent task and 23 additional major schemes of this kind were approved in 1953, bringing the total authorized expenditure on such projects up to £150,000,000. This capital investment is expected to yield an additional output of 26,000,000 tons a year with a substantial increase of productivity.

A variety of new machines were tried out during the year for cutting, loading and stowing at the face, and for transport, tunnelling and setting of roof supports. The Board continued to send their engineers abroad to study new techniques and machines at metal mines as well as coal mines and to bring back any machines likely to be of use under mining conditions in this country. Plans were completed for the construction of an engineering establishment at Bretby, in Derbyshire, where new machines will be designed and tested. Mr. Leslie Henry Daniel, formerly Deputy Chief Engineer of the Ministry of Supply, has been appointed to be its first Director. This will be the third

research establishment to be set up by the Board, the other two being at Isleworth, in Middlesex, and at Stoke Orchard, near Cheltenham, respectively. The latter is now engaged mainly on problems connected with the processing of coal into smokeless fuels and the extraction of by-products. Special attention is being given to the utilization of fines and slurries for these purposes.

FUEL EFFICIENCY

Much discussion took place during the year on the problem of fuel efficiency in Great Britain. Sir Ben Lockspeiser stated recently that this country lacks neither the science nor the technology to save from 15,000,000 to 20,000,000 tons of coal a year at no greater cost than has already been incurred in importing coal from the United States and elsewhere. A debate in the House of Commons on October 26 on the fuel and power industries showed that there is now a large measure of agreement between the political parties on the need for a closer integration of the nationalized coal, gas and electricity undertakings. The Minister of Fuel and Power had to remind the House that he already possesses the necessary powers of co-ordination over these industries. He also announced that he had invited the British Productivity Council to form a non profit-making company to promote economy in the use of fuel and power in industry. This organization has now been established under the title of the National Fuel Efficiency Service. It receives no direct Government subsidy but is financed by the nationalized industries concerned and by fees received for any specific services rendered to private firms. The National Coal Board have agreed to contribute £250,000 annually to the organization for the next five years.

The coal industry itself has hitherto been one of the most inefficient users of coal. The consumption of coal last year in colliery boiler plants amounted to 10,000,000 tons. This was about 1,000,000 tons less than it was a few years back but there is much scope for further improvement. There are about 3,500 Lancashire boilers and about 500 small water-tube boilers in use and most of them are hand-fired and inefficient. During the year the Board placed an order for new mechanical equipment for about 500 boiler units at a cost of £700,000, which they say is the largest order of its kind ever given for this type of equipment. The Board have also made arrangements for training colliery boiler firemen and in the first examination for boiler house attendants held last year by the City and Guilds Institute 87 of the 96 successful candidates were National Coal Board students.

PROSPECTS FOR 1954

There was a remarkable spurt in coal production during December and in the third week of that month the output was the highest achieved since the war. The Coal Board regard this as evidence that the mines are now technically capable of yielding a higher output and it seems to justify the chairman's optimism about the prospects for 1954 provided that the outstanding labour problems can be settled amicably. The planning staff was strengthened last year and materials were being delivered with fewer delays, therefore new developments are likely to be speeded up in 1954. The Board have allowed for an expenditure of £58,000,000 this year on capital investment and this is the first time that the money allocated for this purpose has exceeded the figure assigned in the Plan for Coal.

The Free World's Nickel Refining Troubles

The fact that the working of nickel ore deposits of large size and suitable grade must be matched by treatment facilities, which vary according to the type of ore handled, emerged as one of the principal reasons why the General Services Administration in a report submitted to the Office of Defense Mobilization considered it inadvisable to erect a new custom nickel refinery on the North American Continent. The following article, which is a condensation of that report, traces the history of the nickel industry and supports its principal argument by pointing out that the present changing status of nickel refining technology makes such action inappropriate and also that the definite progress now being made in several directions will probably result in the erection of nickel refining facilities, both on the North American Continent and in Cuba, tailored to suit the requirements of individual deposits.

Until 1875 the nickel industry was based on Continental European smelting and refining plants using ores from Norway and Greece. However, shortly after the turn of the century Canada became the world's leading producer of nickel ores, with the industry being centred at Sudbury, Ontario, where nickel sulphide ores had been discovered in 1883.

In 1929 the International Nickel Co. took over the Mond Nickel Co. Ltd. by an exchange of shares, and by the end of 1929 was responsible for all Canadian mine output, producing about 55,000 s.tons out of a world total of 62,000 tons, while New Caledonia, Burma, Norway and Greece accounted for the balance.

Prior to World War II the recovery of nickel was accomplished almost entirely by pyrometallurgical methods using, in the main, nickel sulphide ores. Little basic change had been made in refining processes, and existing methods were unable to treat low grade silicate ores or lateritic iron ores having a low nickel content. It was only natural that in time a number of methods would be developed to deal with these ores and during and since the war several methods have been tested or operated on a large scale, primarily as a result of U.S. Government assistance in one way or another.

If these newer methods prove successful the entire panorama of the world's nickel industry, its economic ore deposits, processes and channels of distribution will be measurably altered within the next decade. Which methods will prove the most economic only present developments can reveal. Which of the newer projects will prove to be the great producers of the future can only be determined when the most applicable process is adapted to the various deposits.

During and since the war Inco expanded its facilities, modified its pyrometallurgical processes and also put on the market a sintered nickel oxide at a lower price per lb. of contained nickel, which found a ready market. Falconbridge also expanded its Canadian and Norwegian facilities, but, in New Caledonia, Societe Le Nickel made no noteworthy progress.

CARON PROCESS AT NICARO

As a result of nickel demands of World War II, the U.S. government, through its Cuban Nickel Company, erected the first hydrometallurgical plant in Cuba to recover nickel from Cuban lateritic iron ore averaging about 1.35 per cent nickel. Briefly, the process roasted the ore with producer gas to reduce the nickel, then used ammonia and ammonium carbonate to dissolve the nickel and precipitate it as nickel carbonate and then drove off the carbon dioxide to form nickel oxide containing a little cobalt oxide. The ammonia was recovered and recycled in the process. This method was based upon the U.S. patents granted to Professor M. H. Caron, consulting metallurgist of the Billiton Company, of Holland.

The process was piloted by Freeport Sulphur Company, which was responsible for the plant design and for its wartime operation. A good record of production was made during the war at a reasonable cost. No attempt was made

to separate the cobalt from the nickel. Nickel oxide powder was produced, but its conversion to metallic nickel at a plant built with secondhand equipment at Wilmington, U.S.A., proved uneconomic. Shortly thereafter, the oxide was found directly usable by the steel industry and other consumers. The plant is being operated by the Nickel Processing Corporation and currently a sintering plant is being installed. It is proposed to increase the capacity by 10,500 s.tons from the present 14,000 tons to 24,500 tons. So far, it can produce nickel at a cost, including plant depreciation, below the current market.

OTHER PROCESSES

Late in the 1940's a nickel-copper sulphide deposit of some magnitude was discovered and developed at Lynn Lake, Manitoba, by Sherritt Gordon Mines Ltd. Professor Forward developed a hydrometallurgical process to treat these sulphide concentrates, leaching the copper and nickel in an ammoniacal solution. A pilot plant has been in operation for several years at Ottawa, and the company has joined forces with the Chemical Construction Company and is using some of that company's process steps. The process employs ammonia leaching solutions, heat, pressure and gaseous reduction which precipitates selectively the metals in powdered form. The company believes the over-all treatment cost will be less than smelting and refining by orthodox processes, and expects to receive a substantial income from the sale of by-product ammonium sulphate for fertilizer.

This company has allotted \$1,900,000 for a pilot plant to test out the technical and economic possibilities of their new process to treat nickel-copper sulphide concentrates, which does not require pressure vessels. The company expects to separately recover nickel, copper and cobalt, plus the precious metals.

At Fredericktown, the National Lead Company is building a plant using the Chemico process to treat a cobalt-nickel-copper sulphide mill product derived from their present lead operations. A somewhat similar process has been installed for the recovery and separation of copper and cobalt from sulphide concentrates at Garfield, Utah, by the Calera Mining Company, a subsidiary of the Howe Sound Company. The latter plant has encountered seemingly endless difficulties with its equipment, with corrosion, and with failure to separate the small amount of nickel contained in the ore from the cobalt.

A plant is being built by the Hanna Nickel Smelting Company near Riddle, Oregon, to utilize the French-developed Ugine process. This differs from the others in being a pyrometallurgical process, using electric furnaces, to treat a nickel silicate ore mined nearby. The product will be a ferro-nickel of a grade suitable for use in the steel industry.

Currently the Freeport Sulphur Company proposes to use a sulphuric acid leaching process to recover nickel and cobalt from certain lateritic iron ores in the Moa Bay area, Cuba.

The Bethlehem Steel Company holds properties containing many hundreds of millions of tons of Cuban lateritic

iron ores. These have been smelted for iron on a modest scale from time to time but have not been steadily exploited for many years due to the technical difficulties and economics of smelting such ore containing chromium and nickel. Since 1940 the company has developed a nitric acid process, which has been proved technically successful on a small pilot plant scale. The process is highly conservative in nature for not only will it recover the nickel and cobalt separately, but will also recover a commercially usable iron ore, a chromium oxide, aluminium oxide and manganese oxide. The economics of the process depend in a large measure on the financial role played by the sales of these products.

NICKEL REFINING IN THE FUTURE

From the foregoing it will be seen that the nickel industry is at technical cross-roads; the new but economically unproven hydrometallurgical processes are challenging the older pyrometallurgical methods. Lateritic iron ores or nickel silicates may become important sources of our future nickel supplies.

Within the next two years four nickel refineries will be put in operation, one in Canada, two in the United States, and one large addition in Cuba. In Europe Krupp is investing in a small treatment facility in Greece to produce an iron-nickel alloy by a variation of the Krupp-Renn process, using silicate ores. In Japan small extensions to nickel refining facilities are planned based on silicate ores and lateritic ores, mostly from Indonesia and New Caledonia.

Of the North American plants the first to start will be the Sherritt-Gordon refinery at Fort Athabaska, near Edmonton, Alberta, Canada. It will have an initial output of about 9,000 s.tons a year derived from sulphide concentrates and will be enlarged to take care of additional concentrates of a similar nature from a British Columbia mine.

This should be followed early next year by the plant of the National Lead Company at Fredericktown. This will have an initial capacity of about 1,000 tons a year derived from sulphide concentrates.

The third facility, Hanna Nickel Smelting Company, should start its electric furnace smelter late in 1954. This plant will not produce nickel but ferro-nickel, an iron-nickel alloy from silicate ores which are not amenable to concentration. It will have a capacity of some 7,000 to 9,000 tons of nickel contained in the ferro-alloy.

The fourth facility, the expansion of the Nicaro plant in Cuba, should come into production late in 1955, if finally approved. This would add 10,500 s.tons of nickel contained in nickel oxide per year, derived from lateritic iron ores which are not amenable to concentration.

These four facilities will have a combined capacity initially of 27,500 s.tons per year, of which 17,000 tons will be on the North American continent and 10,500 in Cuba.

THREE HYDROMETALLURGICAL PROJECTS

Three projects are now in the formative stage, all employing hydrometallurgical methods, two based upon supplies of lateritic iron ores in Cuba and the third upon Canadian sulphide ores.

Freeport Sulphur Company proposes to erect a refinery in the New Orleans area to treat a nickel slurry shipped from Cuba in a tank steamer. Here also will be located a sulphuric acid plant, utilizing Freeport sulphur. The acid will be the cargo on the return trip of the tanker to Cuba. In Cuba the company proposes to install equipment to mine lateritic iron ores near Moa Bay and install a sulphuric acid leaching plant which will put the nickel into

solution and leave the iron and other elements in a tailing. This solution will be shipped to the United States. Present thinking envisions a plant of 15,000 tons of powdered nickel per year.

Bethlehem Steel Company plans are more indefinite at this time. If a large scale pilot plant is successful a commercial plant of 15,000 tons of nickel per year would probably be completed in 1957. The proposed refinery could be located on the Atlantic seaboard of the United States or in Cuba and no decision has yet been reached.

Falconbridge Nickel Mines Ltd. are starting the construction of a pilot plant to test their new hydrometallurgical process for the recovery of nickel, copper, cobalt and precious metals from the sulphide concentrates of the Sudbury area. The company states that if a facility is built it will be on the North American continent.

CUSTOM NICKEL REFINING

Whereas copper, lead and zinc are handled in many custom smelters the characteristics of nickel ores are so diverse that each treatment facility has been tailored specifically for the ore it was to handle. Inco and Falconbridge can and do handle a small tonnage of sulphide ores on a custom basis, but cannot handle silicate ores or laterites. Silicate and lateritic ores have a low value per ton and cannot be concentrated. In consequence they normally cannot be shipped great distances for treatment due to freight charges. The treatment facilities for these two types of ores are different and neither are suitable for sulphide ores.

The new hydrometallurgical methods are also specifically tailored for the ore at our present state of knowledge. Nicaro can handle the limonite and serpentine varieties of the lateritic iron ores although not with equal efficiency. The acid process of Freeport is suitable for limonitic laterites but not for the serpentine variety due to the excessive acid consumption. The Sherritt-Gordon method is tailored for sulphide concentrates, and the same is true for the Fredericktown plant.

Over and above these considerations are others having to do with location of markets and their ability to absorb by-products, if any, and the relative cheapness of various fuels and chemicals. Under these circumstances no reputable metallurgical organization would consider building a custom smelter of nickel ores or concentrates at this time.

THE MARKET FOR NICKEL

Strategic considerations have played the major role in the nickel expansion programme and these cannot be expected to influence private investment.

The market for nickel is not a free market but one in which the price has been determined by Inco for several generations. It seems apparent that for the next 20 years Inco will continue to dominate the nickel industry albeit its percentage of the Free World nickel output may drop to within a range of two-thirds to one-half. Instead of three major producers we may have half a dozen or more, all with plants in North America or Cuba.

Depending upon the growth in demand, the development of new nickel extraction methods and stable political conditions in other countries, it is possible that facilities might be erected abroad based on the treatment of Venezuelan, Brazilian, Indonesian or other oxide type ores. If such facilities came into operation in other parts of the world it would lessen their dependence upon North American sources for nickel and should make available to the United States a larger share of the North American production.

Accelerating Mine Development at Hartebeestfontein Gold Mining

Changes in the sources of supply of the capital funds necessary to bring new gold mines to the production stage has in turn brought about radical changes in the development programmes and the techniques used in the establishment of new gold mining properties. Hartebeestfontein Gold Mining Company Limited, in the Anglo-Transvaal Consolidated group and one of the youngest developing properties in the Klerksdorp area, provides an interesting example of how these new methods have been applied, particularly with regard to shaft sinking operations. The following article, from our South African correspondent, tells how the basic principle of shaft sinking has been adapted on this property into a continuous process, thereby reducing to a minimum the time lag between the completion of shaft sinking operations and the commencement of underground development.

The cost of opening up a new mine in South Africa has risen during recent years to approximately £12,000,000, an expenditure calling for changes in the traditional patterns of mining finance to equal those found necessary in the field of mining technique. Fortunately the financial mould of mining finance provided sufficient flexibility to allow for a departure from traditional practice, and latterly new funds for mining development are being obtained more readily through loans than through new issues to shareholders.

In the case of Hartebeestfontein Gold Mining Company Limited, capital consists of £1,000,000 in 4,000,000 shares of 5s. each, of which 3,000,000 shares have been subscribed at par and the remaining 1,000,000 have been subscribed at 8s. per share by Anglo American Corporation of South Africa and its associates. So far as loans are concerned, arrangements have been made to borrow £1,500,000 at 5½ per cent p.a. from Anglo American Corporation, while the Corporation has in addition agreed to underwrite a further issue of shares and, subsequently, will lend an additional £1,000,000 on the same terms as the original loan.

These issues are considered to be sufficient to bring the property into production with an initial monthly milling capacity of 50,000 tons. It is therefore essential that to deal with the problem of repayment, the actual production of gold should commence as soon as possible.

Formerly, when development capital was dependent on a successful share issue, the steps by which a developing mine were brought into production were as follows: A temporary headgear was erected and sinking was completed to a limited depth, followed by the installation of a permanent headgear and winders, an item involving a delay of several months. Thereafter shafts were sunk to their final depths and permanent shaft equipment was installed, the latter operation possibly resulting once again in several months of delay. The two shafts were then joined by an underground haulage way, development was commenced on reef and ore reserves were built up. The last operations were the construction of the reduction plant and finally the starting up of this plant, milling reef drawn from the ore reserves.

Current policy, however, is to "telescope" this sequence as far as possible. The first major departure from traditional methods was made at mines of the Anglo American Corporation group in the Orange Free State, where it was decided to continue with the erection of reduction plants simultaneously with shaft sinking operations, and to commence milling with development rock and any ore made available from the opening up of stope faces preparatory

to full scale mining operations. This procedure will be seen through to its logical conclusion at Hartebeestfontein, where it is possible to apply this "telescoping" technique to the entire pre-production programme with most encouraging results.

The plans for the opening up of the Hartebeestfontein area have been largely governed by the existing geological formations. The area was underlain by the Vaal reef horizon which, according to borehole results, is much the same in values and structure as that of the adjoining Stilfontein property. The lease area, however, is traversed roughly north to south by the Kromdraai fault, with the result that the reef in the eastern section has been thrown up approximately 1,000 ft. On the west side of the fault it lies at a depth of about 4,500 ft., dipping down towards the Vaal reef area.

The staggered reef plane thus presented the problem of how to devise the best method of achieving early production of gold to accelerate exploitation of the relatively shallow eastern section. Nevertheless, the greater amount of payable ore lies to the west of the property, and the reduction

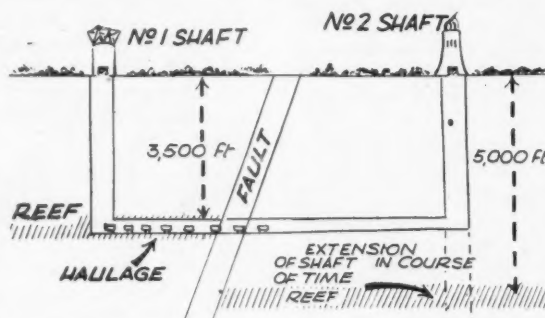
plant must be sited in that area.

Using these geological facts as a basis of procedure, the plan adopted at Hartebeestfontein has been to sink No. 1 shaft to the reef horizon at the relatively shallow eastern section, where gold bearing strata are estimated to lie at a depth of 3,500 ft. In the western sector, No. 2 shaft is being sunk to the same depth. These two shafts will then be connected by an underground haulage way, along which ore transportation will take place before hoisting to the mill at No. 2 shaft.

It is estimated that the eastern area contains enough ore to feed the reduction plant for six or seven years, and that revenue from this source will be sufficient to meet all charges as well as to allow for a fair proportion of distributable profits. During this period the No. 2 shaft system will be completed either by deepening the existing shaft to the western reef horizon, estimated at around 5,000 ft., or by sinking sub-verticals from the 3,500 ft. level.

Both the Hartebeestfontein Gold Mining shafts are circular in construction, have four compartments, and are approximately 21 ft. in diameter. This circular construction is in keeping with recent experience in the Orange Free State, where past experience of shaft sinking indicates that circular shafts are more rapidly sunk than rectangular shafts, and that they offer the secondary advantage of facilitating the establishment of efficient ventilation systems.

To the present time, the new practice of shaft sinking is



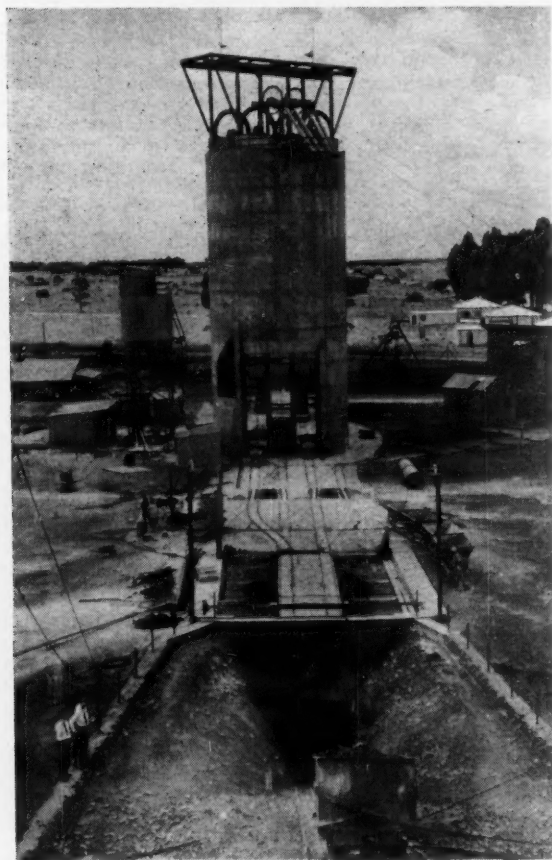
The mining programme applied at Hartebeestfontein Gold Mining

proving efficient. The first sod was cut on the No. 1 shaft site in the first week of January, 1953, and during the following nine months the shaft collar was installed to a depth of 100 ft. and the permanent headgear was erected. Sinking to full depth began in September, 1953, and from that time until the early part of January, 1954, the shaft was sunk 1,223 ft., representing an average descent of approximately 300 ft. per month. In December last 405 ft. were sunk and equipped with permanent structures, an achievement the more remarkable as no special sinking equipment, such as mechanical grabs, are yet in use.

PLANNED CONTINUOUS OPERATIONS

If no serious water trouble is encountered—and all possible precautions against this are being taken—the reef horizon should be intersected in about seven months. It will be necessary to sink beyond the point of horizon intersection, and from this lower reach the drive will be commenced towards No. 2 shaft. The whole operation is being planned so that no pause occurs between the completion of shaft sinking and the starting up of the underground development operations, as the main factor involved in the switchover is the replacing of sinking kibbles by cages and skips. It is of interest to note that the installation of permanent shaft equipment at the same time as sinking operations are carried on allows skeleton cages to be used for lowering piping and other materials by this medium instead of by sinking kibble.

No. 2 shaft is situated approximately 7,200 ft. northwest of No. 1 shaft. It has now been sunk to approximately



No. 1 Shaft. In foreground can be seen the new layout for handling waste rock



The main hoisting shaft, No. 2. Cantilevers are seen for handling heavy or bulky equipment

750 ft. depth and should reach the depth at which the connection haulage drive is to be opened up later this year.

The approach to the question of headgear construction by engineers at Hartebeestfontein Gold Mining was that basically the headgear of a shaft is an extension of the lining of that shaft.

SAVING IN TIME AND MATERIAL

No. 1 shaft headgear at Hartebeestfontein looks exactly like a 75 ft. high silo and is a continuation of the shaft lining through the collar. No. 2 shaft headgear, which is 146 ft. high, is to be the main hoisting shaft, and has an initial diameter at base of 63 ft. It rests on 10 ft. deep foundations on solid base. It is estimated that the use of these types of structure compared with the traditional steel constitute a saving of time and material amounting together to between 45 and 50 per cent financial saving.

No. 2 shaft is already equipped with a 4,700 h.p. winder, which will be powerful enough to meet hoisting needs for some time. In the full operational method, ore will be tipped into small hoppers at both shafts, about halfway up and within the towers. These hoppers will feed into chutes passing through and outside, which in turn will drop the ore into bins from which it will be transported by conveyor belt to stockpiles.

In the case of No. 1 shaft, ore will be transported to the reduction plant by road until the underground haulage way is completed. A new method of handling waste rock is being practised at No. 1 shaft. In this method the rock is tipped from the kibble into side-tipping cars on the bank. These are pushed out some 50 yd. from the bank and are discharged into grizzlies on surface level over underground hoppers. These in turn feed to a side discharge car which is hauled by a winch to the top of the waste dump.

TECHNICAL BRIEFS

Electronic Screening Devices

A task which, though formidable, might perhaps prove as significant as the invention of printing is the development of electronic machines that may eventually be able to scan up to 5,000,000 published documents per hour and identify those relating to prescribed information desired. The development might provide a significant milestone in the use of written records.

The quick and efficient screening of past documents is vital to mining engineers, scientists and research managers who are concerned with the development of new products, processes and materials. Yet examination of past records consumes an alarming proportion of total working time—some authorities claim that 25 per cent of the total time necessary to complete a research project may be expended on the finding, correlation and assimilation of past knowledge—and it is estimated that some 60,000,000 pages of technical matter are published annually. The scope for electronic screening is thus apparent.

The development is taking place at the Battelle Institute, America, from which source it has been announced that although able to perform routine information selection at high speed, with excellent precision and patience, the machine will, in fact, be a moronic robot as human reading involves the ability to understand.

The president of the Battelle Institute, Mr. C. Williams, states in the current issue of the Cleveland Federal Reserve Bank's *Monthly Business Review* that an adequate machine language must be evolved if "machine searching" is to come into widespread use. In other words, the key to maximum effectiveness for the new equipment will be in the development of a new system of techniques for translating information into symbols appropriate for machine use. Such a system will be necessary to enable the machine to respond to the widest possible range of requests for information, and to make the translation as simple as possible. Transitional stages are naturally anticipated. Conventional manual library techniques will be used and will be improved, while abstract bulletins covering specific fields of knowledge and indexed for machine use will be prepared as requirements are defined. Comprehensive reviews of current trends will follow and finally, as abstract bulletins build up extensive files, machine scanning will be developed to provide information on demand.

The ultimate goal of the new conception is to meet the needs of expanding research activity.

Geobotanical Methods in Uranium Prospecting

A report from the U.S. Geological Survey indicates that a brief investigation has been made of geobotanical methods of prospecting in uranium bearing areas of New Mexico. These techniques are comparatively new, and are based on observations that certain plants grow more prolifically in the vicinity of mines or mine dumps, or that they exhibit certain typical reaction to specific minerals. This new realization is a further adoption of earlier observations, now established knowledge, which show that certain plant species have an affinity for acidic soil while others prefer lime soils.

In the course of the geobotanical work in New Mexico it was determined that the uranium analyses of trees growing on the Todilto Bench, and the mapping of selenium-indicator plants on the sandstones of the Morrison formation, could be recommended as a method of prospecting. It was found that the average uranium content in the ash trees rooted in ore deposits of the Todilto limestone member is more than 20 parts per 1,000,000, while trees rooted in barren limestone average approximately 10 parts per 1,000,000. Tenorimetric methods were used in the survey to detect the uranium content of the plant ash.

A Centrifugal Long Casting Process

A special method for the manufacture of long cast cylinders and tubes has been developed by the United States Pipe and Foundry Company, Special Products Division. The method is

a horizontal rotation process, and Sheepbridge Engineering Ltd. announced that by an agreement with the United States Company it can be employed by two Sheepbridge subsidiaries, Sheepbridge Steel Castings Ltd., and Sheepbridge Stokes Ltd.

A refractory spray round the walls of the mould is a prominent feature of the new horizontal rotation process. This spray induces the casting metal to flow evenly through its length and by so doing eliminates a principal difficulty of normal British practice. Named the Burlington process, the horizontal rotation process has already been used by Sheepbridge Stokes Ltd. in the successful casting of experimental iron cylinders 10 ft. in length and 8 in. in diameter.

It is stated to be the intention of Sheepbridge Steel Castings Ltd. to spin cast piping in high alloy steels and nickel base alloys by the new process. This intention is said to have aroused interest in the chemical industry, where long piping in special alloys is difficult to produce by normal methods. Heat resisting and corrosion resisting steel alloys will also be spun in long castings by this new process for ultimate use as rollers in heat treatment furnaces and runout rolls for steel mills.

New Tellurium Alloy Sheath for Power Cable

A new lead alloy containing tellurium for use as power cable sheaths was reported recently at the winter general meeting of the American Institute of Electrical Engineers.

Extensive tests have shown that the alloy possesses a combination of stabilized bending and creep properties that are superior to those of other cable sheath alloys now in use, according to engineers of the General Electric Company.

Factory extrusion studies have shown that the new alloy is easily controlled during extrusion operations with standard lead press equipment, and a wide latitude of heat treatment and heat application at joint end wipes and other such locations, does not affect its desirable properties.

Since completion of the development of tellurium alloy sheaths, several large commercial orders of cable with this type of sheath have been produced. The General Electric Company has been actively pursuing the goal of finding an improved type alloy sheath with maximum long-time bending and creep strength characteristics for some time.

Copper Ore Roasting

It has been announced from Melbourne that a fluo-solids roasting process for copper ore is being tested at laboratories in the city by the Commonwealth Scientific and Industrial Research Organization, by arrangement with the Mount Lyell Mining and Railway and Mount Morgan companies. In the process the copper is extracted from the roasted product by leaching and electrolysis.

The chairman of the Mount Lyell company has stated that there is no immediate prospect of any major change in the company's metallurgical processes at Queenstown. The new process, however, appears to offer substantial savings in costs. Our Australian correspondent, writing from Melbourne at the close of the old year, points out that the roasting process is being investigated also by the Peko Company at Tennant Creek, Northern Territory.

British Standard for Balata Belting

The British Standards Institution has just issued a British Standard for Balata belting, namely B.S. 2066:1953. This standard specifies requirements for Balata belting used for power transmission purposes and other load bearing applications, for example straps and slings.

The standard also specifies details of the fabric, impregnation, balata content, quality of balata, etc., and includes appendices giving details of methods for testing. Additionally, appendices are included concerning working conditions and information to be given with the enquiry or order.

Copies of this standard may be obtained from the British Standards Institution, Sales Branch, British Standards House, 2 Park Street, London, W.1, at a price of 2s. 6d.

METALS, MINERALS AND ALLOYS

COPPER.—Copper has been looking a little firmer this week, both in London and New York, and in the States the feeling seems to be growing that February buying may be sufficiently good to prevent any further cut in the domestic price, at any rate for another few weeks. It is, however, difficult not to feel bearish about the long term prospects, a feeling which is reinforced by this week's announcement that Kennecott is to cut production with effect from February 1 at its Chino Mine in New Mexico and Ray copper mine in Arizona. The effect of the cut will be to reduce output of refined copper by 1,400 tons per month, compared with Kennecott's total domestic production of around 35,000 tons per month. Phelps Dodge is also reducing output by 1,000 tons per month by cutbacks at two of its large open cast mines in Arizona.

Canadian copper production last year is reported by the Dominion Bureau of Statistics at 251,600 s.tons compared with 258,038 s.tons in 1952.

Japanese electrolytic copper production last year totalled 89,982 tons compared with 94,369 tons the year before.

TIN.—The news from Malaya this week that the Legislative Council has given its support to the International Tin Agreement by a big majority loses most of its significance in face of the Randall Commission's rejection of international commodity agreements of any kind. As our London Metal Exchange correspondent emphasizes elsewhere, the industry is now faced with the prospect of restrictions in output imposed by the economics of production and with considerably more violent price fluctuations than appeared probable under the control scheme.

There are a number of producers who have been working unprofitably for some months now but who maintained their output with an eye on quota allocations, and we may now expect a spate of shutdowns from such mines. Incidentally, in the struggle to reduce costs the advantage will not necessarily lie entirely with the big dredge companies. Where these are already operating on low unit costs they will remain in a strong competitive position, but the essential characteristic of dredging costs is their inflexibility, which makes any cutback in production an expensive matter. In contrast hydraulic mining concerns which are prepared to modernize their earth moving methods have considerable scope for cost reduction. Some Chinese owners in Malaya have already taken steps in this direction and it has, moreover, been noteworthy in past tin depressions that Chinese producers have shown a surprising facility for maintaining production at apparently sub-economic prices.

In his budget message last week President Eisenhower indicated that the budget at present assumed the withdrawal of the Texas Smelter from operation in the course of this year by which time it is estimated that all stockpile purchases will have been completed. In view of the losses, which the Texas Smelter has been incurring (see this column, January 15), it is difficult to visualize it being carried on by private enterprise unless its ore buying policy was drastically revised, which would mean cutting out part, or all, of the intake of Bolivian ores.

Either way the outlook for Bolivian producers must be alarming and it is not surprising there is further news this week regarding the rumoured plans to erect a smelter in or near Bolivia. A commission of four West German engineers from Lurgi Chemical Machinery Company and from Krupps have gone to study the technical and economic problems involved at the invitation of the Bolivian Mining Corporation. As we have frequently pointed out in the past, circumstances are all against such an undertaking. Not only would fuel requirements have to be assured at an economic cost, but also large tonnages of high grade ore would have to be imported from great distances to give the smelter a chance of economic production.

For the first time for several years Malayan tin exports in December dipped below 4,000 tons. Total exports for the year amounted to 61,724 tons compared with a production of tin in ore of 56,254 tons and imports of 6,528 tons. The figures for the preceding year were respectively 64,120, 56,838, and 5,832 tons. Production in December, 1953, was a record for any post-war month at 5,201 tons.

Production in Indonesia totalled 33,752 tons last year compared with 35,003 in 1952. Of last year's output, 21,329 tons came from Banka and 12,423 tons from Billiton and Singkep.

LEAD AND ZINC.—The poor demand in the States for lead and zinc has also been causing further cutbacks in domestic mine production of these metals. The latest company to be affected is the Bunker Hill and Sullivan Concentrating Company which is cutting down from a six to a five day week and other companies in the district are considering similar action. U.S. lead stocks at the end of last year stood at 81,152 s.tons.

the highest year-end figure since the war. Preliminary estimates of U.S. lead consumption for 1953 put the total at around 1,220,000 tons, an increase of about 8 per cent over 1952.

Yugoslavia's lead production is expected to have reached a record level last year. Figures for the first 10 months were in the neighbourhood of 60,000 tons, some 5,000 tons up on the preceding year.

Canadian lead production last year is reported to be 197,250 s.tons compared with 168,842 s.tons in the previous year. Corresponding figures for zinc are 398,825 s.tons compared with 371,802 s.tons in 1952.

Japanese production of electrolytic zinc in 1953 is reported by the Japanese Mining Association at 54,859 tons, and for refined zinc at 23,949 tons, compared respectively with 49,341 tons and 20,686 tons in 1952. Japanese electrolytic zinc manufacturers have been expanding their plant capacity of late and this fact, coupled with the levelling off in the export market which Japanese galvanizers are currently experiencing, may find the Tokyo market over supplied in coming months.

ALUMINIUM.—Reports from New York indicate that the tendency for stockholders to cut down inventories, which began to manifest itself towards the end of last year, is continuing, and cutdowns and stretch-outs in military orders are also giving some anxiety. During the last month Alcoa has suspended about 1,000 employees at its fabricating plants.

French aluminium production last year rose to 112,100 tons compared with 106,000 tons in 1952. Of last year's total 92,400 tons were contributed by Pechiney.

West German aluminium production for 1953 is provisionally estimated at 106,000 tons, an increase of about 5 per cent on 1952. Production of re-melted aluminium in the same period is estimated at 42,000 tons. Part of the dismantled Erft plant near Cologne, owned by the Vereinigte Aluminium Werke, resumed production last summer and it is expected that when in the course of this year this plant is again in full production, total West German aluminium capacity will be around 125,000 tons a year.

MOLYBDENUM.—The U.S. Bureau of Foreign Commerce has announced relaxations on the export of this metal as a result of the improved supply position. No quantitative limits are now imposed, although exports are still subject to control in the interests of security.

This improved picture has been brought about largely by expanded production by the Climax Molybdenum Company whose mine is the largest primary source of molybdenum in the world. This year it will supply about two thirds of the free world molybdenum output, which is forecast at 65,000,000 lb. for 1954. Climax has apparently developed a method of block caving in a grand manner by what is described as literally collapsing a mountain from the inside and then drawing out the ore. 8,000,000 tons of ore will be extracted this year and mill output is expected to be about 42,500,000 lb. of metal, a gain of 78 per cent over 1952.

NICKEL.—Cutbacks in metal demand generally have not yet affected the nickel market. In the States civilian consumers have had their January allocations reduced by as much as 25-30 per cent over the preceding month, as a result of increased military demands. Actual civilian requirements have no doubt been falling off at the same time, so that the actual effective short delivery to consumers will average considerably less than this and in certain cases may have no effect on production at all. Despite this tight supply situation the U.S. Department of Commerce has announced a relaxation in export controls and an export quota for the first quarter of the year of 10,000 lb. of metal and 5,000 lb. of pure nickel powder. Previously no exports were allowed.

Meanwhile it is reported from Port Colborne that Inco has made a first shipment of nickel under the contract signed with D.M.P.A. last June calling for 120,000,000 lb. of the metal by the end of 1958. Deliveries will now be made at a monthly rate of 2,000,000 lb. until completion of the contract. Inco's nickel production is now running at the rate of approximately 275,000,000 lb. per year.

PLATINUM.—Canadian platinum production last year is provisionally estimated at 134,108 oz., compared with 122,317 oz. in the preceding year.

TUNGSTEN.—The Ministry of Materials has again cut its selling price for 65 per cent tungsten ores, this time by 20s. in the case of wolframite which now stands at 145s. per 1 ton unit, and by 10s. in the case of scheelite which is now quoted

at 140s. On the international market, business is so thin that prices remain virtually nominal. Meanwhile there has lately been talk in London of a partial return to free trading in tungsten. The Ministry of Materials still has long-term contracts which will continue to run for a considerable time, which makes it difficult to restore complete freedom to the market. Nevertheless, it is being suggested that a scheme may be worked out whereby consumers will be allowed to buy a proportion of their requirements from the world market, taking the remainder from the Ministry.

Iron and Steel

Lord Aldenham, chairman of Westminster Bank, warns that in the drive for export markets, "increasing competition is now no distant menace" but British steel makers are unperturbed. They have the most modern plant in Europe and outside Russia are the biggest producers. Last year they increased exports 140,000 tons to more than 2,500,000 tons and reduced imports by 640,000 tons. Ingot production is running at the rate of 18,250,000 tons, the highest ever. Home demand is still at the peak and unless there is a violent slump, surplus outputs could probably be cleared by a further restriction of imports which last year averaged over 140,000 tons a month.

What will happen to iron and steel prices is anybody's guess. If coal prices and rail freight charges go up to balance wage advances for the miners and the railwaymen, steel prices may follow suit. But the Iron and Steel Board will certainly be reluctant to raise the maximum price levels and as an alternative might insist on maximum profit margins. We must wait and see.

Fortunately, the makers of iron and steel have plenty of work in hand, and aided by ample stocks of raw materials are maintaining production and deliveries at record targets. It is a "bull" point also that the industry continues to enjoy complete immunity from labour troubles. Raw materials, too, are available in ample tonnages. Imports of foreign ore last year totalled 11,357,000 tons which is 1,390,000 tons better than the previous record in 1952. Scrap also is more plentiful and if we are still buying big tonnages overseas, the price has been sensibly reduced of late.

Pig iron production has not yet fully overtaken the requirements of the steel works and foundries. Another new blast furnace will soon be at work and this will make a big difference. In the meantime big tonnages of foreign iron are coming in, and the first consignment from Russia has already arrived in South Wales.

The outlook for re-rollers of small bars and light sections remains unpromising. Even home orders are scarce and Continental prices, being considerably below the British re-rolled bar basis of £35 per ton, export business is unobtainable. Ample tonnages of home produced billets and sheet bars are available and it is difficult to dispose of defectives.

There are fewer complaints of inadequate deliveries of steel plates which seems to suggest that a better balance between supply and demand has been achieved. Sheet makers are inundated with inquiries and order books have recently been filled up with substantial bookings for South America, whilst business in heavy joists and sections has also taken a turn for the better.

The London Metal Market

(From Our Metal Exchange Correspondent)

After the shake-out of the previous week prices have developed a firmer tendency, which has been helped by a falling off in offerings of all metals by producers' agents. Turnovers, however, have not been impressive, and it is considered the reaction is of a somewhat technical nature. Continental demand for copper and zinc remains good, with prices based on American selling prices which remain unchanged. March shipment wirebars fetching about 29 c. per lb. c.i.f. Europe. The demand for lead is only spasmodic, and it is understood prompt lead is changing hands on the Continent at a little below the seller's price for current month metal quoted in London. The only other minor features have been an increasing backwardation in zinc and the reappearance of a small backwardation in lead, both of which can be attributed to the approach of the end of the month. The sharp advance in the January quotation for lead which occurred on Thursday afternoon was due to a large buying order which probably emanated from Europe.

The main items of interest to the market have both been on the subject of tin and have emanated from America. The first was the President's intimation that his government would probably cease operating the Texas smelter when the stockpile needs were fulfilled, which would be the case at latest by the end of this year; the second was of a more vital nature in the shape of the attitude of the Randall Commission which is

strongly against the U.S. taking part in any international commodity agreement. This must make very remote the chances of America signing the proposed International Tin Agreement, and other countries will now have to reconsider their attitudes very carefully as mathematically it is still possible for the agreement to come into force. As has been pointed out before, the American position has always been extremely strong owing to the stocks they have available being in excess of the maximum tonnage envisaged for the buffer pool, and if the agreement was to be introduced and the price moved up to a level which the Americans thought to be too high, then it would be as easy matter for them to use their own metal to force the price down, so that in effect the minimum price of tin would tend to be established by the buffer pool management whereas its upper limit would be controlled by American action. The chances of the agreement being ratified seem to have evaporated overnight, and the industry may be forced back on to restrictions on production without any international buffer pool stock to smooth out what will certainly be violent fluctuations.

On Thursday morning the Eastern price for tin was equivalent to £648½ per ton c.i.f. Europe.

Closing prices and turnovers are given in the following table:—

	January 21		January 28	
	Buyers	Sellers	Buyers	Sellers
Tin				
Cash	£652½	£655	£643	£645
Three months	£628	£630	£627½	£630
Settlement		£655		£645
Week's turnover		640 tons		470 tons
Lead				
Current month	£82	£82½	£83½	£83½
Three months	£82½	£82½	£83	£83½
Week's turnover		4,300 tons		4,825 tons
Zinc				
Current month	£70½	£70½	£72½	£72½
Three months	£69½	£69½	£70½	£71
Week's turnover		4,775 tons		3,475 tons
Copper				
Cash	£219	£219½	£221	£222
Three months	£208	£209	£208½	£209
Settlement		£219½		£222
Week's turnover		6,850 tons		4,150 tons

OTHER LONDON PRICES—JANUARY 28

ANTIMONY

English (99%) delivered,	
10 cwt. and over	£210 per ton
Crude (70%)	£200 per ton
Ore (60% basis)	22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade)	£483 per ton
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OTHER METALS

Aluminium, 99.5% £156 per ton	Osmiridium, £40 oz. nom.
Bismuth	Osmium, £65/£70 oz. nom.
(min. 4 cwt. lots) 16s. lb.	Palladium, £7 15s./£8 10s. oz.
Cadmium (Empire), 13s. 10d./	Platinum, £27/£33 5s.
14s. 4d. lb.	Rhodium, £42 10s. oz.
Chromium, 6s. 5d./7s. 6d. lb.	Ruthenium, £25 oz.
Cobalt, 20s. lb.	Quicksilver, £64
Gold, 248s. f.oz.	ex-warehouse
Iridium, £60 oz. nom.	Selenium, 30s. 6d. nom.
Magnesium, 2s. 10½d. lb.	per lb.
Manganese Metal (96%-98%)	Silver 73½d. f.oz. spot and f'd.
£225/£262	Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC.

Bismuth	60% 8s. 3d. lb. c.i.f.
	50% 7s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (lumpy)	£14 5s. 6d. per ton c.i.f.
" (concentrates)	£14 5s. 6d. per ton c.i.f.
" Refractory	£13 17s. 6d. per ton c.i.f.
Baluchistan Metallurgical	£15 19s. 6d. per ton c.i.f.
Magnesite, ground calcined	£26 - £27 d/d
Magnesite, Raw	£10 - £11 d/d
Molybdenite (85% basis)	102s. 4d.-103s. per unit c.i.f.
Wolfram (65%)	World buying 125s. nom.
"	145s. nom. U.K. Selling
Scheelite (65%)	Nom.
"	140s. nom. U.K. Selling
Tungsten Metal Powder ..	16s. nom. per lb. (home)
(98% Min. W.)	
Ferro-tungsten	13s. nom. per lb. (home)
Carbide, 4-cwt. lots	£35 13s. 9d. d/d per ton
Ferro-manganese, home ..	£52 10s. 0d. per ton
Manganese Ore Indian c.i.f. Europe	
(46% - 48%)	7s. 11d. - 8s. 4d. per unit
Brass Wire	2s. 4½d. per lb. basis
Brass Tubes, solid drawn	1s. 8½d. per lb. basis

COMPANY NEWS AND VIEWS

Outlook For Gold & Base Metals

The year 1953 was a very difficult one for Gold & Base Metal Mines of Nigeria, declared Major General W. W. Richards at the delayed annual meeting of the company held yesterday in respect of the year ended December 31, 1952.

Production costs during 1953 increased by approximately 10 per cent owing to the continued rise in the cost of stores and African labour; some of the areas worked purely for tin incurred losses due to the rapid fall in the price of tin and to the Nigerian Government's insistence on a minimum amount of work being carried out on all leases; and finally, there was very little machinery available either for tin-winning or for earth works and dams for water conservation. However, recent developments and future prospects of the company's properties on the Plateau Areas point to a general all-round improvement. The construction of the all-important water storage dams is going ahead; additional machinery is arriving on the properties; the conversion from company labour and tributing to contract work in three of the four principal areas has proved successful; while at Delimi, where the lack of a good water supply has held up its expansion, it is proposed to soften up the ground by the use of explosives to effect dry stripping operations which would increase output and reduce costs.

The chairman did not give any definite indication as to what the likely financial results would be for 1953 beyond stating that "provided the price of tin does not vary considerably from its present price over the next three or four months, working profit, before depreciation, interest charges, etc., would be somewhat less than for the previous year."

The outlook for 1954, he said, was difficult to assess but it was hoped to increase columbite production by 50 per cent (in 1953 columbite production totalled 92 l.tons) all of which has been sold forward under contract to the U.S. at a price of between £2,180 and £2,252 per s.ton and with the arrival of the balance of the machinery and equipment on order shareholders would undoubtedly see the results of the company's reorganization and development programme carry to fruition.

Ariston Maintains Its Distribution

The preliminary profit statement issued by Ariston Gold Mines (1929) for the year ended September 30, 1953, announces the recommendation of a final dividend of 6d. per share making, with the interim already paid of 3d. per share, a total distribution of 9d. per 2s. 6d. share, or 30 per cent, the same as was paid in the preceding year.

Year to Sept. 30	Working Profit £	Tax- ation £	Net Profit £	Dividend Distribution %	Dividend £	Carry Forward £
1953	369,207	223,306	145,901*	30	182,813	44,084
1952	409,228	253,787	155,441*	30	177,188	56,025

* Both years exclude an over provision made in respect of taxation and duty. Over provision in 1953 was £24,971 (1952 £14,880).

Since the tonnage milled during the year under review increased to approximately 346,300 tons (330,300 tons) and gold production rose to 116,821 oz. (114,521 oz.)—both of these are record figures—the reduction in profits most probably was due to the sharp slump in the premium obtainable from sales of gold on the free market. It may be recalled that during the preceding year the average price received per ton from April to the end of September was £13 3s. 3d. per oz., an average premium of about 15s. per oz., which will have been much higher than that received during the year under review.

During the first three months of the current year—with hardly any premium accruing from free market sales—profits have fallen away to approximately £124,000 against £160,000 in the corresponding period of the year under review. Nevertheless, the tonnage throughput is gradually climbing and during the past two months has been 31,500 tons, which is a step in the right direction towards the target of 40,000 tons per month envisaged when the new winder comes into commission.

The final dividend of 6d. per share will be paid to those registered on February 8 and the warrants will be posted on March 1. Meeting, London, March 1.

"Zams" Earns More but Pays Same

Zambesia Exploring Company, the mining finance house whose interests are mainly connected with Northern Rhodesian and East African enterprises, has now issued an advance profit statement for the year ended December 31 last. The figures given, which are subject to audit, show that the working profit for the year was 10 per cent greater at £101,443 against

£91,899. But most of the increase was absorbed by the higher off-take in taxation so that the freely available balance was virtually the same as for 1952. The company also owns 50 per cent of the issued capital of Tanganyika Holdings.

Year to Dec. 31	Working Profit £	Tax- ation £	Net Profit £	Dividend Distribution %	Dividend £	Carry Forward £
1953	101,443	70,906	30,537	15	71,390	42,154*
1952	91,899	62,798	29,101	15	68,145	53,602

* After providing £25,000 for general reserve.

The accounts of its wholly owned subsidiary, Zambesia Investment, are not consolidated owing to the different nature of its operations. This company showed a slight increase in its working profit for 1953, which rose from £75,539 to £79,244, and in its net profit from £38,668 to £40,864 after providing for all charges including taxation.

"Zams'" final dividend of 11 per cent will be paid, subject to shareholders' approval, on March 23 to all those registered on February 12. Meeting, London, March 19.

Jos Tin's Investment Portfolio

The feature of the report and accounts of Jos Tin Area (Nigeria) covering the year ended July 31 last is contained in the statement by the chairman, Mr. A. B. D. Fox, who forcibly reminds shareholders that the company's fortunes are not wholly dependent on the price of tin. During the company's last financial year the average price received per ton of tin concentrates declined by £92 to £592 per ton which represents a metal price of approximately £830 per ton. Since the end of the financial year Mr. Fox says that the average metal price has been approximately £600 per ton at which level the company can hardly hope to show much profit. Thus he tells shareholders that while Jos Tin Area is, and hopes to remain, a mining company, the contribution which the company's investments make as a means of insuring and stabilizing the dividends distributed is becoming increasingly important. Indeed, total investments in relation to the issued capital of £89,320 are very satisfactory.

At July 31 last quoted investments stood in the books at £253,385 with a market valuation of £299,523, an appreciation of £46,138 over the book value. An increase of over 18 per cent in spite of the setback in the mining markets in which the company has 30.2 per cent of its investments obviously indicates that a sound policy is being followed. The largest percentage of its holdings—36.7 per cent—is in commercial and industrial shares, followed by 19.5 per cent in banks and insurance, 8.4 per cent in financial and investment trusts, 1.8 per cent in government stocks, and 3.4 per cent in the oil market.

Year to July 31	Mining Revenue*	Mining Costs £	Tax- ation £	Net Profit £	Divi- dend %	Carry Forward £
1953	101,356	64,793	25,782	26,508	20	28,366
1952	123,743	69,436	44,000	24,975	20	16,683

* Proceeds from tin and columbite

During the year to July 31 last the company produced 157 tons of tin and 3½ tons of columbite against 169 tons of tin in the preceding year. During the first five months of the current year the output of tin was 64½ tons of tin concentrates compared with 66½ tons of tin concentrates in the corresponding period of the year under review. Meeting, London, February 3.

New Guinea Goldfields May Pay This Year

New Guinea Goldfields, whose report and accounts for the year ended September 30 last have now been published, have not fared too well during the first three months of the current year. The company does not issue monthly profit figures but only the monthly tonnage treated and the gold recovered. According to our figures ounces of gold recovered during the first three months of the current year (October to December, 1953) amounted to 3,925 oz. from 9,100 tons compared with 5,943 oz. recovered from 8,100 tons in the corresponding period of the year under review, indicating a rather sharp falling off in the grade of ore treated. These figures, of course, were known to the company when the report covering the year to September 30 last was published as it is dated January 8, 1954. Nevertheless this has not prevented the chairman, Mr. J. Kruttschnitt, from saying that "liquid funds are now building up and the directors hope to be able to pay a dividend during the current year." If so, it will presumably be made possible from the revenue obtained from the company's large stake in the New Guinea timber business which, in fact, contributed as much as £92,220 to the total income of the company for the past year.

Bullion sales during the year under review, as can be seen

from the table immediately below, expanded by about £40,000 reflecting perhaps the larger gold production which rose from 18,306 oz. to 21,623 oz. and which doubtless earned a considerable amount by way of additional revenue from premium gold sales—a favourable factor probably not operative in 1954.

Year to Sept. 30	Bullion Revenue	Total Income	Mining Costs*	Other Expenses†	Net Profit	Carry Forward
	£	£	£	£	£	£
1953	249,918	351,922	225,207	89,342	37,373	291,222
1952	209,869	328,373	185,545	99,286	43,542	78,676

* Including direct and indirect expenses, redemption charges, royalty and bullion realisation expenses

† Including timber, freighting, working expenses, overhead and redemption charges and royalty, and directors' fees

Meeting, Sydney, Australia, January 29.

West Africans in December

The December mine returns from ten of the West African gold producers listed below provide some interesting features.

Lyndhurst Deep Level and Konongo continued to mill a grade of ore in excess of 20 dwt./ton and Taquah and Abosso maintained its excellent progress as the cumulative profit figures for the first nine months of its current financial year reveals.

Goid Coast Main Reef is another company making steady headway, but the same cannot be said for Ashanti and Bibiani whose profit figures to date, despite the greater gold production in each case, do not compare with those achieved in the cor-

responding period in the previous year. Amalgamated Banket is still experiencing some difficulty with its new aerial ropeway, but when this installation is running smoothly the company should forge ahead rapidly. Marlu's monthly return was below average but its cumulative profit to date is still well in advance of that recorded a year ago. Bremang Gold Dredging, whose year end profit figure shows a reduction of approximately £30,000 compared with the preceding year, has not had the continued uninterrupted benefit from its fleet of dredges during the year, which explains the all round decline in its performance.

Company	December, 1953			Months since year end	Current Financial Year			Last Financial Year		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
A.B.A.	65*	10,973	17.9	3	200	32,379	52.6	174	27,461	64.4
Ariston Gold	31	9,915	38.6	3	93	29,623	124.2	89	30,974	159.9
Ashanti	24	15,249	59.9	3	72	45,733	189.0	67	44,500	227.6
Bibiani (1927)	30	6,300	4.5	3	89	18,955	20.2	92	18,096	34.0
Bremang†	404	2,283	7.8	12	6,472	30,685	127.4	7,034	32,829	158.0
G.C.M.R.	9	3,445	6.9	6	54	21,817	64.2	51	19,319	59.2
Konongo	2	2,604	12.8	3	8	7,724	37.7	6	6,621	30.2
Lyndhurst Deep	0.8	1,255	6.3	3	2	3,653	17.9	3	3,273	16.0
Marlu Gold	37	3,999	15.5	3	118	12,444	50.5	123	11,917	31.7
Taquah & Abosso	26	6,170	7.9	9	226	44,608	90.5	198	46,399	139.1

* Break in Manbrim ropeway affected production for 1 week

† Cu. yd. dredged—also No. 1 dredge closed on December 7 for re-assembly on the Offin River. L indicates a loss.

As the basis of calculating monthly profits varies from company to company, a direct comparison one with another is not possible. The basis for any one company has, however, remained consistent unless otherwise indicated.

RAMBUTAN, LIMITED

The Forty-eighth Ordinary General Meeting of Rambutan, Limited, was held on January 20, 1954, at the Registered Office, Redruth.

Mr. Donald W. Thomas (Chairman) presided.

The Report and Accounts for the year ended June 30, 1953, having been circulated for the prescribed time, were taken as read, as was also the Acting Chairman's Statement, circulated with the Report and Accounts, which was as follows:—

Shareholders will observe from the Directors' Report that Mr. Stanley Wickett retired from the position of Chairman of the Company on December 31, 1952, and that he was succeeded in office by Mr. D. W. Thomas who has been a Director of the Company for thirty years.

Mr. Wickett, previous to his resignation, had been Chairman of the Company for ten years and his decision to retain his seat on the Board, which he has held since his appointment in 1912, gives his colleagues the greatest pleasure and they hope they may long continue to have the benefit of his wise counsel and advice.

Mr. D. W. Thomas is now in Malaya making an inspection of the various mines comprising the Gopeng Group, of which Rambutan Limited is one.

During the financial year ended June 30, 1953, 80.22 tons of tin ore were recovered from 301,500 cubic yards of ground treated. This compares with the 1951/2 production of 81.49 tons from 268,600 cubic yards.

The Accounts for the financial year submitted herewith show a gross profit of £9,301 as compared with £7,855 in the previous year. A total of £7,902 was paid to the Malayan Government in respect of tin ore sold during the year, and £9,265 provided for United Kingdom and Malayan Taxation.

Two Interim Dividends, a total of 8½%, paid to Shareholders on account of profits for the year absorbed, after taxation, £4,688. The sum of £1,853 has been written off Capital Expenditure and £2,000 transferred to General Reserve leaving a balance of £12,429 on Profit and Loss Account which the Directors propose to carry forward to the current year.

REHABILITATION AND WAR DAMAGE AWARDS.

The Awards have now been agreed as follows:—

Towards Costs of Rehabilitation ..	£10,190
Compensation for Assets lost in 1941 ..	582
	£10,772

Before June 30, 1953, a distribution of 75% was received—and this, as is shown in the Balance Sheet, amounted to £7,602 (on Rehabilitation account), an initial repayment of £41 having previously been credited. Seventy-five per cent of the compensation for Assets lost in 1941—£436—has also been received, and is shown in the Profit and Loss account. These together reconcile the figure of £8,039 shown in the Balance Sheet as the Interim Payment on account of the Award. It is understood that repayments to be made will not exceed 90.4%

of the Awards. The Directors have accordingly deemed it prudent to write down the balance of the Rehabilitation Account to £1,569—the amount which the Company has since received. A transfer from the General Reserve account of £4,057 has provided for the excess of Rehabilitation Expenditure over 90.4% of the Awards.

The reports of our General Managers, Messrs. Osborne and Chappel, appended hereto, gives particulars of work done at the mine during the period under review. It will be noted that in July, 1952, Malayan Government Legislation provided for the establishment of a compulsory employees' Provident Fund to which both employer and employee contribute approximately 5% of the employee's wages. Shareholders have been advised of the output for the first three months of the current financial year, a total of 21½ tons, and it is anticipated that satisfactory returns will continue. The price of tin was well maintained until April, 1953, when it fell by approximately £200 per ton metal and further declined to the uneconomic level of £568, equivalent to £409 per ton tin ore. Latterly there has been some improvement, but few Malayan producers can work at a profit and provide reserves to ensure the future with tin at its present price.

The reconvened International Commodity Conference on Tin recently completed its second session at Geneva. A draft International Agreement was prepared for detailed consideration by the Governments and members of the industry concerned and it is to remain open for acceptance from March 1 to June 30, 1954. In the meantime an International Tin Council has been set up in London.

There was a general improvement in the security position during the year and no incidents occurred on the Company's property. Constant Military patrol of the district continues as a precaution.

It is my privilege to record our thanks to the General Managers, the Resident Manager and Staff at the Mine, for their loyal service under conditions which, although showing improvement, are nevertheless difficult.

Before moving the adoption of the Accounts Mr. Donald Thomas thanked Major W. E. Hosking for all that he had done during his term of Acting Chairman. He advised Shareholders that he had recently visited the property on a number of occasions and that he had been very pleased to see the developments taking place at the Mine.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

At a later stage in the Meeting the Chairman proposed a vote of thanks to the General Managers, the Resident Manager, and the Staff at the Mine. He added that as a consequence of his visit to Malaya he had been able to appreciate the difficulties under which the staff were living. In this connection he wished particularly to accord appreciation of the services of Mr. F. Bede Cox (Resident Manager) who would be retiring shortly after service with this Company and associated companies of over thirty-three years. Mr. and Mrs. Bede Cox would be very much missed by their friends in Malaya and he wished them a very long and happy retirement.

WESTMINSTER BANK LIMITED

CONTINUED EXPANSION OF BUSINESS

LORD ALDENHAM'S REVIEW

The annual general meeting of Westminster Bank Limited will be held on February 17 at the head office, 41 Lothbury, London, E.C.

The following are extracts from the statement by the Chairman, **The Rt. Hon. Lord Aldenham**, circulated with the report and accounts for the year to December 31, 1953:

I am glad to report that our business continues to expand; the number of our account holders has substantially increased and the volume of work passing through our books is correspondingly greater. Our policy of branch extension has made satisfactory progress during 1953, and we have opened 21 new offices, bringing the total to 1,104.

In spite of this increase in work and in the number of branches I am pleased to tell you that there has been a slight reduction in the total number of staff employed, whilst at the same time we believe that the high standard of service we have set ourselves is being well maintained.

The accounts show a net profit for 1953 of £1,474,736, which is £28,190 more than last year, after provision for taxation and appropriations to inner reserves.

DIVIDEND DECISION

We have been able to maintain the dividend at 18 per cent. per annum, a rate which has been rather surprisingly described in some quarters as "meagre." It must be admitted at once that the declaration of this dividend has come as a disappointment to some of our shareholders, since several of our competitors have been able to declare increased dividends. But it should not be forgotten that for many years now this Bank has paid a higher rate of dividend than almost all its competitors, and that we are still in that proud position; nor should it be forgotten that, whilst any depreciation of investments suffered up to December 31, 1951, had always been set off against Profits or Reserves, we decided to show in our published statement of June 30, 1952, the depreciation on our holdings of British Government securities which had occurred in the previous six months, without minimizing that deficiency by any transfer from inner reserves or from current profits.

That temporary deficiency amounted to £7,900,000 compared with Published Reserves at that date of £9,300,000; it is true that this fall has been recovered since then, but after so recent and so sharp a reminder of the way in which the market value of even British Government securities may fluctuate we have decided with regret that it is in the best interests of our shareholders that the whole of the profits of 1953, after payment of taxation and of the usual dividend, should go to fortify the Published and the Inner Reserves, upon which we rely to take care, not only of such losses as these, but of any others we may sustain through the normal risks of business.

During 1953 the total of Current Deposit and Other Accounts increased by nearly £27,000,000. Advances fell by £13,000,000 partly as a result of the lower level of the prices of raw materials. Bills Discounted and Investments increased by £31,000,000 and £21,500,000 respectively.

As a nation our two main considerations at the end of each year must be to judge how far progress has been made towards a real and lasting peace, and how far we have been able to add to our scanty gold reserves by earning a little more than we have spent.

We may well be pleased that the Prime Minister has been able to tell us that the danger of war is further away than it was in 1951; and it is a great achievement indeed that, in spite of our very heavy and very necessary expenditure on defence, it seems certain that in 1953 we have paid our way. The balance of payments showed a surplus of £26,000,000 without defence aid in the first half of the year, and it looks as if the surplus for the second half will not be less. But the margin of success is narrow, and the surplus is some way short of the figure we must aim at if we are to pay our debts and help to develop the Commonwealth.

EXPORTS

In considering how we are to increase our exports, the price factor is of course the first consideration, and it is most disturbing to find many instances of our having priced ourselves out of traditional markets.

But almost as important as price is the ability to promise quick delivery, and the certainty of being able to keep those promises. It should be easily understood that when a buyer buys a foreign machine, and gets it sooner than his competitor who has bought British, lasting harm has been done to our prospect of future exports. But this lesson is best learned on the spot, and it would be valuable indeed, if not only our export sales managers, but also some of the foremen at the producing end, could get out to their foreign markets and see the harm

which is done by delays.

Seven instances of ships turning away from Tyneside to foreign ports for their repairs have recently been reported in the Press, and our lack of ability to guarantee an early completion date seems to have been one of the main causes; such cases do bring home to us all that the so-called two sides in industry must be united as one side, if we are to survive foreign competition.

A stable cost of living would greatly help our ability to give good delivery dates by lessening the risk of industrial disputes; and much has been achieved in this direction during 1953. There has been a comparatively small rise in the index of retail prices, in spite of the reduction in the food subsidies.

Competition brings demand from overseas buyers for longer terms of payment. This Bank, and other banks, can help, and are helping, by providing finance to our exporters to enable them to grant easier payment terms to the overseas buyer. Our Bank also maintains an intelligence service able and more than willing to help any manufacturer wishing to expand his exports to new markets.

The growth of our total exports to the dollar markets of North America during 1953 has been most useful; it is not always remembered that Canada is almost as good a customer of ours as the whole United States, and indeed in some years a better customer.

In recent months there has been a definite recession in business in the United States and though we may hope that better methods have been evolved to avoid such serious depressions as those of 1929 and 1938, yet we must consider the effect on our economy which any marked recession in the United States would have.

The sterling area gold and dollar reserve increased during 1953, but is still at a dangerously low level. If there were a serious fall in American purchases of sterling area exports, the only possible course for us would be to cut our imports from America to the barest essentials.

CONVERTIBILITY

It does not seem likely that full convertibility between the pound and the dollar would help us much at present. Until our national shop window has become as attractive to the whole world as the shop window of the United States, convertibility would seem to imply either a lower price for the pound sterling measured in dollars, or an even more severe restriction of dollar imports than we suffer from now. The latter device would be highly unsatisfactory, since it would lessen the volume of our own trade, whilst any foreign holder or earner of sterling would be free to acquire with that sterling, dollar goods, unhampered by our own import restrictions.

There have been welcome signs, however, during the year that our shop window is becoming as attractive as the American: motor car exports to North America were insignificant up till five years ago; but in 1953 good salesmanship had brought them into the first place in our list of exports to that area. British tenders for the supply of electric power installations have been successful even over the tariff wall; and if we fear that the Buy American Act may hinder these exports in future, these successes do at least advertise to the rest of the world how competitive some of our prices and delivery dates can become when we really try.

It may well be that the time will become ripe during 1954 for another tentative step towards convertibility; but we must not risk the disastrous experiment of 1947, which resulted in our selling much too cheaply the dollars we needed, and still need, ourselves. The problem of convertibility is clearly linked to that of United States tariffs.

Coal exports have increased, but are still disappointing. There has been in 1953 no corresponding rise in production which the outsider would expect from so much capital expenditure. But industrial production as a whole showed a welcome recovery during 1953.

There is a great need for more savings, which would help to increase exports both by reducing home consumption and by providing a higher figure of modern capital equipment behind each worker, which is necessary if we are to support our wage-structure. In spite of this, many people seem to regard earnings of interest on savings as morally less desirable than earnings by way of salary and wage, and in fact they are taxed more severely. Pensions are rightly treated as earned income; but where a professional man has to provide for his own old age, the income from his savings is not regarded as earned.

Much of this review has been devoted to the problem of future exports. If it were widely understood that the monthly export figure is in effect the nation's wage-package, we should have gone far to achieve the unity of purpose between employers and employed that is essential to our export trade.

In 1953 we improved our defences and our gold and dollar reserve, but we have not yet won back to real security—and it is almost nine years since the war in Europe ended.

ANGLO-TRANVAAL CONSOLIDATED INVESTMENT CO. LIMITED

Mining Companies' Directors' Reports for Quarter Ended 31st December, 1953

Following are the reports on work done during the quarter ended 31st December, 1953

ANGLO-TRANVAAL COLLIERIES, LIMITED

The Sales Output of the Subsidiary Collieries controlled by this Company for the quarter ended 31st December, 1953, totalled 255,236 tons.

EASTERN TRANVAAL CONSOLIDATED MINES, LIMITED

PRODUCTION—The total tonnage treated during the quarter ended 31st December, 1953, by the four gold mines operated by this Company amounted to 56,310 tons, resulting in a working profit (including sundry revenue) of £49,236 for the quarter. Additional revenue from the sales of gold, at enhanced prices, amounted to £1,150, making a total profit for the quarter of £50,386.

TAXATION—Taxation for the six months ended 31st December, 1953, in respect of total profits for this period amounting to £100,826, is estimated at £22,000.

CAPITAL EXPENDITURE—Capital Expenditure during the quarter amounted to £27,623.

DEVELOPMENT—The total development footage amounted to 11,492 feet.

REDUCTION PLANT—Construction work on the Reduction Plant at the Sheba Gold Mine has been commenced.

POWER SUPPLY—It is estimated that the extension of the New Consort Power Station will be completed during the following quarter.

HARTEBEESTFONTEIN GOLD MINING COMPANY, LIMITED

SHAFT SINKING

No. 1 SHAFT was sunk 904 feet in Dolomite to a total depth of 1,154 feet. In addition, 8,540 cubic feet were excavated in the cutting of a pump chamber at a depth of 950 feet below the collar.

The intersection in pilot holes of water-bearing fissures, requiring cementation, considerably delayed sinking operations.

The shaft was concrete lined to a depth of 1,104 feet, of which 904 feet were accomplished during the quarter. The equipping of the shaft was completed to a depth of 1,050 feet, of which 900 feet were accomplished during the quarter.

No. 2 SHAFT—Sinking was resumed on 14th November, 1953, and the shaft was sunk 565 feet in Dolomite to a total depth of 665 feet. In addition, 1,200 cubic feet were excavated in the cutting of a pump chamber at a depth of 400 feet below the collar.

The intersection in pilot holes of water-bearing fissures, requiring cementation, delayed sinking operations.

The shaft was concrete lined to a depth of 641 feet, of which 541 feet were accomplished during the quarter. The equipping of the shaft was completed to a depth of 560 feet, all of which was accomplished during the quarter.

Both shafts are being concrete lined and equipped with steel buntons and guides concurrently with sinking operations.

SHAFT SINKING EQUIPMENT

No. 1 SHAFT—A 125 h.p. winch was erected and brought into operation as a service hoist for shaft timbermen.

No. 2 SHAFT—The erection of the Stage Hoist and of the 4,700 h.p. permanent North Electric Hoist, together with its building, was completed. The erection of the internal steelwork of the headgear was completed.

EUROPEAN HOUSING—During the quarter 31 houses were completed, bringing the total to 103 houses built in an extension of the Stilfontein Township.

POWER SUPPLY—The erection of the second boiler at the power station was completed.

MINE BUILDINGS—The erection of the permanent workshops was completed.

LABOUR—The Labour strength at the end of the quarter was: Europeans, 174; Natives, 996.

CAPITAL EXPENDITURE—Capital Expenditure amounting to £463,073 was incurred during the quarter.

The total Capital Expenditure, including preliminary expenses, incurred to December 31, 1953, amounted to £2,269,470.

MERRIESPRUIT (ORANGE FREE STATE) GOLD MINING COMPANY, LIMITED

DEVELOPMENT—Preparations on the 35th Level for the resumption of development, which was stopped temporarily during the previous quarter, are nearing completion.

SHAFT EQUIPMENT—At No. 1 Shaft the installation of the permanent shaft equipment was completed to the 35th Level Brow Box. Work is proceeding on the erection of the permanent headgear.

At No. 2 Shaft, work is proceeding on the erection of the Sinking Hoist and the batching plant.

EUROPEAN HOUSING—Good progress has been made with the permanent housing programme in the Virginia Township. At the end of the quarter 43 houses were completed and 6 houses were under construction.

MINE BUILDINGS—The permanent shaft offices at No. 1 Shaft have been commenced.

LABOUR—The Labour strength at the end of the quarter was: Europeans, 109; Natives, 496.

CAPITAL EXPENDITURE—Capital Expenditure amounting to £310,052 was incurred during the quarter.

The total Capital Expenditure, including preliminary expenses, incurred to 31st December, 1953, amounted to £3,184,291.

MIDDLE WITWATERSRAND (WESTERN AREAS), LIMITED

The Company retains its interests in Mineral Rights in the Virginia and Odendaalsrus Districts of the Orange Free State and in the Klerksdorp District of the Transvaal.

The following is the report on work done during the quarter ended 31st December, 1953.

DRILLING OPERATIONS—During the quarter 152 feet were drilled in Borehole TL.37/52, which was completed to a depth of 6,445 feet.

The following are particulars of the quarter's drilling:

Borehole Number	Farm	Depth at December 31st, 1953 (Feet)	Formations Traversed During Quarter		
			Borehole Depth (Feet)		Description
			From	To	
TL.37/52	Klerksdorp Townlands No. 44 District Klerksdorp	6,445 Borehole completed on October 8th, 1953	6,293 6,298 6,306	6,298 6,306 6,445	Witwatersrand Quartzites Gold Estates Reef Zone Witwatersrand Quartzites in footwall of Vaal Reef Zone

NEW KLERKSDORP GOLD ESTATES, LIMITED PRODUCTION

Tons milled : 34,900, yielding 4,432 ounces fine of gold.

Revenue from Gold	£54,852
Working Costs	£54,598
	£ 254
Sundry Revenue	£ 1,048
Working Profit for quarter	£ 1,302
Working Costs per ton milled	31s. 3d.
Working Costs per ounce fine recovered	246s. 5d.

In addition to the above revenue, £150 accrued during the quarter in respect of additional revenue from the sales of gold at enhanced prices.

The working profit for the quarter, as shown above, does not take into consideration interest on loans, amounting to £1,512, for the quarter.

No liability was incurred for mining taxation payable to the Government in respect of the profits earned for the quarter.

DEVELOPMENT—The total footage advanced during the quarter amounted to 1,675 feet. Of 1,625 feet sampled, 1,005 feet, equal to 62 per cent, were classed as payable having an average value of 4.14 dwt. over a channel width of 48.3 inches, equivalent to 200 inch-dwt.

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

PROPERTY—The Company has purchased the Mineral Rights of a portion of the farm Klerksdorp Townlands No. 44, District Klerksdorp. The area purchased is 69,444 morgen in extent and adjoins the Western Boundary of the Company's mining area.

CAPITAL EXPENDITURE—Capital Expenditure amounting to £5,658, was incurred during the quarter. Of this amount, £2,027 was expended on plant for uranium production and £3,631 was expended on the purchase of the above-described property.

ORE RESERVE—The payable Ore Reserve as at 31st December, 1953, was estimated to amount to 137,000 tons, having an average value of 2.47 dwt. over a stopping width of 47.1 inches.

In addition, there are estimated to be contained in shaft and safety pillars 50,000 tons, having an average value of 2.49 dwt. over a stopping width of 56.8 inches.

(In the compilation of the above Ore Reserve, the Pay Limit was based on a gold price of £12 8s. 3d. per ounce fine and on anticipated Working Costs.)

RAND LEASES (VOGELSTRIJSFONTEIN) GOLD MINING COMPANY, LIMITED

PRODUCTION

Tons Crushed : 471,500 yielding 81,488 ounces fine of gold.

	Per Ton Crushed
Revenue from Gold	£1,009,904 42s. 10d.
Working Costs	£ 977,053 41s. 5d. (239s. 10d. per ounce fine)
	£ 32,851 1s. 5d.
Sundry Revenue	£ 7,000 3d.
Working Profit for Quarter	£ 39,851 1s. 8d.

Working Costs per ton, 41s. 5d., include 5s. 7d. in respect of development expenditure.

In addition to the above revenue, £3,370 accrued during the quarter in respect of additional revenue from the sales of gold at enhanced prices.

TAXATION AND GOVERNMENT'S SHARE OF PROFITS—Taxation and the Government's share of profits in terms of the Mining Lease, for the six months ended 31st December, 1953, in respect of total profits for this period, amounting to £95,262, are estimated at £4,500.

CAPITAL EXPENDITURE—The expenditure on Capital Account during the quarter amounted to £35,099.

SHAFT SINKING. No. 1 TERTIARY SHAFT—Preparatory work was commenced during the quarter in connection with the sinking, from the 36th Level, of a vertical Tertiary Shaft having a diameter of 17 feet 6 inches, inside lining. During the quarter 83 feet were risen in the portion of the shaft between the 36th Level and the sheave-wheel position, of which 19 feet were at full dimensions.

DEVELOPMENT—A total of 18,822 feet of shaft sinking and development was accomplished during the quarter, of which 6,285 feet were sampled, showing 3,055 feet, equal to 49 per cent, as payable.

Payable reef disclosures were distributed as follows:

Reef	Footage sampled	Payable				
		Ft.	Percentage	Channel Width (in.)	Channel Value (dwt.)	In.-dwt.
Main Reef	1,865	815	44	35.2	6.78	238
Main Reef Leader	2,760	1,400	51	12.7	15.17	193
South Reef	250	110	44	8.1	49.05	397
Total Main Reef Series	4,875	2,325	48	20.4	10.73	219
Bird Reef	40	—	—	—	—	—
Kimberley Reef	1,370	730	53	52.9	3.82	202
Totals and Averages	6,285	3,055	49	28.2	7.63	215

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

DIVIDEND—A Dividend (No. 35) of 2½ per cent (3d. per Share) was declared payable to Shareholders registered at 31st December, 1953.

VILLAGE MAIN REEF GOLD MINING COMPANY (1934) LIMITED

PRODUCTION

Tons crushed: 103,000 yielding 15,707 ounces fine of gold.

	Per Ton Crushed
Revenue from Gold	£195,016 37s. 10d.
Working Costs	£158,954 30s. 10d. (202s. 5d. per ounce fine)
Working Profit for quarter	£ 36,062 7s. 0d.

Working Costs per ton, 30s. 10d., include 6s. 0d. per ton in respect of development expenditure.

In addition to the above revenue, £425 accrued during the quarter in respect of additional revenue from the sales of gold at enhanced prices.

The working profit for the quarter, as shown above, does not take into consideration the amount payable in Mining Taxation nor the interest on loan amounting to £47 for the quarter.

The outstanding loan of £20,000 owing to Middle Witwatersrand (Western Areas) Limited, was repaid on 15th October, 1953.

TAXATION—Taxation for the six months ended 31st December, 1953, in respect of total profits for the period amounting to £74,997 is estimated at £26,000.

CAPITAL EXPENDITURE—The expenditure on Capital Account during the quarter amounted to £211.

DEVELOPMENT—7,619 feet of development were advanced during the quarter and 5,627 feet of old drives and crosscuts were reconditioned.

In addition, 1,851 feet of underground diamond drilling were done as an aid to development, and in exploratory work.

DIVIDEND—A Dividend (No. 27) of 10 per cent (1.5d. per share) was declared payable to Shareholders registered at 31st December, 1953.

VIRGINIA ORANGE FREE STATE GOLD MINING COMPANY, LIMITED

DEVELOPMENT—A total of 10,351 feet of development was accomplished, of which 9,557 feet were at No. 1 Shaft and 794 feet were at No. 2 Shaft. In addition, 167,460 cubic feet were excavated in sumps, pump chambers and service bays.

Progress was retarded due to the intersection in pilot holes of water-bearing fissures, requiring cementation.

Connections between the underground workings at No. 1 and No. 2 Shafts were made on the 16th and 21st levels during the quarter, thereby removing the single entry restrictions imposed by the Mining Regulations.

The following are the results of the quarter's development:

	No. 1 Shaft	No. 2 Shaft	Totals and Averages
Footage Advanced	9,557	794	10,351
Footage on Reef	3,383	333	3,716
Footage Sampled	3,340	345	3,685
Payable Footage Sampled—			
Payable Footage	2,215	130	2,345
Percentage Payable	66.3%	37.7%	63.6%
Channel Width—In.	33.0	28.1	32.7
Channel Value—Dwt.	8.42	9.94	8.41
In.—Dwt.	278	223	275

(The above results are based on actual sampling. No allowance has been made for adjustments necessary in the valuation of the corresponding Ore Reserve.)

SHAFT EQUIPMENT—At No. 1 Shaft, work is in progress on the installation of the permanent underground loading and measuring chutes. The erection of steelwork in the permanent headgear was continued.

At No. 2 Shaft, a 390,000 cubic feet per minute exhaust fan was erected on surface and brought into operation and the shaft will be used temporarily as an upcast ventilation shaft. Hoisting in this shaft has been suspended.

REDUCTION PLANT—Construction work on the first 50,000 tons per month section of the Reduction Plant was sufficiently advanced to permit of the commencement of trial milling operations and milling, using development rock, was started during November. Work has been commenced on extensions to the plant to provide a milling capacity of 75,000 tons per month.

URANIUM AND ACID PLANTS—Construction work is proceeding on the Uranium and Acid Plants.

MINE BUILDINGS AND PLANT—In the No. 1 Shaft area, the permanent shaft offices were completed and work is proceeding on the permanent change houses, the surface track layout and on extensions to the workshops.

The building of the permanent mine general offices is in progress.

Work was commenced on the construction of the railway line from Virginia Station to the Mine.

The erection of the 19,000 cubic feet per minute Esscher Wyss turbo-compressor is proceeding.

WATER SUPPLY—The Irrigation Department has completed the laying of a 27 inch main from Welkom to the Virginia Area.

EUROPEAN HOUSING—During the quarter 53 houses were completed, bringing the total to 301 houses completed in the permanent quarters in the Virginia Township. Work is proceeding on a further 80 houses.

NATIVE ACCOMMODATION—The erection of additional rooms at No. 1 Compound was continued.

LABOUR—The Labour strength at the end of the quarter was: Europeans, 456; Natives, 2,684.

CAPITAL EXPENDITURE—Capital Expenditure amounting to £1,149,094 was incurred during the quarter.

The total Capital Expenditure, including preliminary expenses, incurred to 31st December, 1953, amounted to £9,052,108. Included in this amount is a total of £659,582 expended on Uranium and Acid production

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